

Amendment and Response

Applicant: Rory A. Heim et al.

Serial No.: 09/851,765

Filed: May 9, 2001

Docket No.: 10006454-1

Title: METHOD AND APPARATUS FOR COMPENSATING FR INK CONTAINER EXTRACTION CHARACTERISTICS

A² cont. problems include reduction of print quality due to excessive backpressure, reduction of printhead reliability due to air ingestion and increased stranding of ink in the ink container 12, to name a few problems.

Please replace the paragraph beginning at page 11, line 7, with the following rewritten paragraph:

A³ The receiving station 14 includes a guide rail 46, an engagement feature 48 and a latch engagement feature 50. The guide rail 46 cooperates with the guide rail engagement feature 40 and the replaceable ink container 12 to guide the ink container 12 into the receiving station 14. Once the replaceable ink container 12 is fully inserted into the receiving station 14, the engagement feature 42 associated with the replaceable ink container engages the engagement feature 48 associated with the receiving station 14, securing a front end or a leading end of the replaceable ink container 12 to the receiving station 14. The ink container 12 is then pressed downward to compress a spring biasing member 52 associated with the receiving station 14 until a latch engagement feature 50 associated with the receiving station 14 engages a hook feature 54 associated with the latch member 30 to secure a back end or trailing end of the ink container 12 to the receiving station 14. It is the cooperation of the features on the ink container 12 with the features associated with the receiving station 14 that allow proper insertion and functional interfacing between the replaceable ink container 12 and the receiving station 14. The receiving station 14 will now be discussed in more detail with respect to Fig. 5.

Please replace the paragraph beginning at page 12, line 28, with the following rewritten paragraph:

A⁴ Fig. 6 is a bottom plan view of the replaceable ink container 12 of the present invention. The replaceable ink container 12 includes a pair of outwardly projecting guide rail engagement features 40. In the preferred embodiment, each of these guide rail engagement features 40 extend outwardly in a direction orthogonal to upright side 70 of the replaceable ink container 12. The engagement features 42 extend outwardly from a front surface or leading edge 72 of the ink container 12. The engagement features 42 are disposed on either

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A⁴
cont.
side of an electrical interface 74 and are disposed toward a bottom surface 76 of the replaceable ink container 12. The electrical interface 74 includes a plurality of electrical contacts 78 electrically connected to an electrical storage device 80.

Please replace the paragraph beginning at page 13, line 28, with the following rewritten paragraph:

A⁵
The handle portion 44 disposed on a top surface at the trailing edge 82 of the replaceable ink container 12. The handle portion 44 allows the ink container 12 to be grasped at the trailing edge 82 while inserted into the appropriate bay of the receiving station 14.

Please replace the paragraph beginning at page 15, line 12, with the following rewritten paragraph:

A⁶
Fig. 9 represents a block diagram of the printing system 10 of the present invention shown connected to an information source or host computer 90. The host computer 90 is shown connected to a display device 92. The host 90 can be a variety of information sources such as a personal computer, work station, or server to name a few, that provides image information to the controller 29 by way of a data link 94. The data link 94 may be any one of a variety of conventional data links such as an electrical link or an infrared link for transferring information between the host 90 and the printing system 10.

Please replace the paragraph beginning at page 15, line 20, with the following rewritten paragraph:

A⁷
The ink container 12 shown in Fig. 9 includes the electrical storage device 80 and three separate ink supplies representing the tri-color ink container 12 shown in Fig. 6. When properly inserted into the tri-color receiving bay 58 fluid communication is established between each of the separate ink supplies or chambers and one or more inkjet printheads 16.

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Please replace the paragraph beginning at page 17, line 25, with the following rewritten paragraph:

A⁸ In one exemplary embodiment, the capillary storage member is a bi-component fiber having a polypropylene core material and a polyethylene terephthalate sheath material. This bi-component fiber is described in more detail in U.S. Patent Application 09/430,400 entitled "*Ink Reservoir For An Inkjet Printer*," Attorney Docket No. 10991407, filed October 29, 1999 to David Olsen, Jeffrey Pew, and David C. Johnson, and assigned to the assignee of the present invention.

Please replace the paragraph beginning at page 18, line 13, with the following rewritten paragraph:

A⁹ At a constant extraction rate of 1 cubic centimeter per minute of ink from the ink container 12, the dynamic backpressure represented by curve 100 reaches the maximum operating backpressure 102 when approximately 27 cubic centimeters (see dashed line 104) is extracted from the ink container 12. Further extraction of ink from the ink container 12 beyond the maximum operational backpressure at the extraction rate of 1 cubic centimeter per minute will result in loss of print quality. The technique of the present invention allows the extraction characteristics to be used to adjust the ink extraction rate to prevent operation of the printing system 10 beyond the maximum operational backpressure. In the exemplary embodiment, the extraction rate is reduced from 1 cubic centimeter per minute to .25 cubic centimeters per minute to allow ink to be further extracted from the ink container 12. At the extraction rate of .25 cubic centimeters per minute, the maximum operational backpressure represented by curve 102 is not reached until approximately 35 cubic centimeters (see dashed line 106) are extracted from the ink container 12. By adjusting the extraction rate of ink from the ink container 12, eight additional cubic centimeters of ink can be extracted from the ink container 12 as represented by the difference between the ink extracted at .25 cubic centimeters per minute and the ink extracted at an ink extraction rate of 1 cubic centimeters per minute.

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Please replace the paragraph beginning at page 19, line 19, with the following rewritten paragraph:

A10
The technique of the present invention, allows ink to be extracted from the ink container 12 at a given extraction rate. The extraction rate can be reduced upon the occurrence of an appropriate condition for reducing the ink extraction rate from the ink container 12 so that more ink can be extracted from the ink container 12. One such condition for adjusting the extraction rate is when the backpressure within the ink container reaches a threshold backpressure value such as maximum operational backpressure. Alternatively, the ink extraction rate from the ink container 12 can be reduced when a threshold amount of ink is extracted from the ink container 12. The ink extraction rate is then reduced so that a greater amount of ink can be extracted from the ink container 12.

Please replace the paragraph beginning at page 20, line 13, with the following rewritten paragraph:

A10
The ink container is first inserted into the printing system 10 as represented by step 108. Upon insertion, the controller 29 reads the extraction characteristics or lookup table that is stored in the electrical storage device 80 associated with the ink container 12 as represented by step 110. The controller 29 then determines the amount of ink remaining in the ink container 12 as represented by step 112. The amount of ink remaining in the ink container 12 is either stored on the electrical storage device 80 associated with the ink container 12 or alternatively, the controller 29 keeps track of the amount of ink printed for determining the amount of ink remaining in the ink container 12. For the case where the controller keeps track of the amount of ink printed, this information can be stored back on the electrical storage device 80 so that the electrical storage device 80 contains information for determining the amount of ink remaining in the ink container 12.

Please replace the paragraph beginning at page 21, line 5, with the following rewritten paragraph:

A11
The monochrome ink container, such as shown in Fig. 7 will in general have different ink extraction characteristics from the tri-color ink container shown in Fig. 6. The